

### **REMARKS**

The present document is submitted in reply to the Non-final Office Action dated February 3, 2010 ("Office Action").

Applicants have cancelled all of the previously pending claims 1-31 and added new claims 32-85. Support for these new claims in the application as filed is summarized in the table below. No new matter has been introduced.

Claim	Support in the application as filed
32, 50, and 66	Original claim 1, Specification at page 8, line 9 and lines 16-19; page 11, lines 10-14; page 12, lines 11-12; page 14, lines 32-33; and page 28, lines 26-27
33	Specification at page 24, lines 23-24
34	Specification at page 28, lines 26-27
35 and 51	Original claim 4
36 and 52	Specification at page 27, line 9
37 and 53	Specification at page 14, lines 34-35
38, 39, 54, 55, 77, and 78	Original claim 11, Specification at page 14, line 21
40, 56, and 79	Specification at page 15, line 15
41, 57, and 76	Specification at page 9, lines 30-34
42, 58, and 69	Original claim 7
43, 59, and 70	Original claim 9
44, 60, and 71	Original claim 10
45 and 61	Original claim 8
46, 62, and 82	Abstract, and Specification at page 9, lines 6-8
47, 63, and 83	Specification at page 9, line 11
48, 64, and 84	Specification at page 11, line 11
49, 65, and 85	Specification at page 15, line 6
67 and 68	Specification at page 12, lines 5-6
72, 73, 74, and 75	Specification at page 15, lines 24-34
80	Specification at page 15, lines 8-9
81	Specification at page 14, lines 32-33

All of the new claims cover the invention elected in Applicants' response to the restriction requirement filed on October 14, 2009, i.e., a method of delivering a composition (e.g., a biocidal composition) to a substrate (e.g., a lignocellulosic substrate). It is therefore respectfully requested that these new claims be considered.

Applicants address below the rejections raised in the Office Action as applied to new claims 32-85.

**Rejection under 35 U.S.C. § 102**

The Examiner asserts an anticipation rejection based on either Elder, US 6,345,450 (“Elder”) or Hager, US 4,287,239 (“Hager”). See the Office Action, pages 2-4, items 2 and 3. Applicants provide reasons why new claims 32-85 are novel over both references.

**Elder**

Independent claims 32 and 50 will be discussed first. These two claims cover two related methods of delivering a composition to a lignocellulosic substrate, which is either **kiln dried** or has an initial moisture content **not greater than 15%** by weight. In other words, both claimed method use **substantially dry** lignocellulosic substrates as starting materials.

Elder teaches a process for drying or curing **green wood** (i.e., **wet wood**), including a heating step, a cooling step (also known as a “flash-off” step), and a drying step. See the abstract and the specification, column 9, lines 29-30. This reference lists 6 elements essential to the completion of a successful flash-off step in the Elder process. See column 15, lines 3-31. The first essential element is use of **green wood** (i.e., **wet wood**) as the starting material. Clearly, the process taught in Elder, requiring **wet wood** as the starting material, is very different from the two related methods covered by claims 32 and 50, both requiring **substantially dry** lignocellulosic substrates as starting materials.

For the foregoing reason, claims 32 and 50 are not anticipated by Elder. Nor are claims 33-49 (all dependent from claim 32) and claims 51-65 (all dependent from claim 50).

Applicants now turn to claim 66, the other independent claim. This claim covers a method of delivering a **composition** to green lumber. According to the specification:

- The **composition** can be **any fluid** composition to be delivered to a substrate, e.g., green lumber. See page 11, line 10.

- The **composition** can be an **aqueous solution** or contain a polar/non-polar **solvent**, such as alcohol or vegetable oil. See page 11, lines 11-14.
- The **composition** contains an **active component**, e.g., a biocide, a pesticide, a fungicide, a polymeric/pre-polymeric component that increases density or strength properties of a lignocellulosic substrate, a waterproofing agent, or a dye. See page 11, lines 16-23.

In view of the above teachings, a skilled artisan would readily understand that the composition to be delivered to green lumber by the method of claim 66 (1) is in **liquid** form, and (2) contains an **active component**.<sup>1</sup>

The Elder process requires heating green wood and then immediately cooling the heated wood with a **cooling fluid**. See the Abstract. According to the Examiner, the cooling fluid taught in Elder is equivalent to the composition used in the claimed method. See the Office Action, page 2, fourth paragraph. This is incorrect for two reasons.

First, Elder points out in the abstract that the cooling fluid has a **humidity** substantially less than the relative **humidity** of the enclosure where green wood is heated. It is commonly known that “**humidity**” refers to a measure of the moisture amount in a **gas**. In view of this common knowledge, a skilled artisan would understand that, as the cooling fluid used in the Elder process has a humidity, it must be **gaseous**. Note that fluid refers to a continuous, amorphous substance whose molecules move freely past one another; it can be either liquid or **gas**. As a matter of fact, Elder mentions **ambient air** (i.e., a gas mixture) as an example of the cooling fluid. In short, unlike the composition used in the claimed method, which is in **liquid** form, the cooling fluid taught in Elder is **gaseous**.

Second, the **cooling fluid** used in the Elder process is to reduce the temperature of heated green wood, not to confer a particular feature to the wood via an active component. Given this intended purpose, one with ordinary skills in the art would know that this cooling fluid does not need to contain an **active component**, such as those

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<sup>1</sup> Applicants leave it to the Examiner’s discretion as to whether the features “in liquid form” and “containing an active component” should be incorporated into claim 66.

required by the composition used in the claimed method. Indeed, Elder does not teach any cooling fluid that contains an active component.

Taken together, Applicants submit that the composition used in the method of claim 66 differs from the cooling fluid used in the Elder process in at least two aspects: (1) **liquid form versus gas form**, and (2) **presence of an active component versus absence of an active component**. For this reason, claim 66 is not anticipated by Elder. Nor are claims 67-85, all dependent from claim 66.

Hager

Again, Applicants start with independent claims 32 and 50. As pointed out above, these two claims cover two related methods of delivering a composition to a **substantially dry** lignocellulosic substrate. Both methods recite a step of heating a target zone of the substrate using **radio frequency (RF) energy or microwave energy**.

Hager teaches a method for preserving hardwood with a preservative solution. See the abstract. According to this reference, the hardwood can be heated prior to treatment with the preservative solution so as to facilitate penetration of the preservative into the wood. See column 6, lines 7-9. It further teaches that this heating process can be “most conveniently done with **steam or water**.” See column 6, lines 9-10. Hager DOES NOT mention at all applying RF energy or microwave energy to heat substantially dry lignocellulosic substrate, as required by claims 32 and 50. Thus, this reference does not anticipate both claims. Nor does it anticipate claims 33-49 and claims 51-65, which depend from claims 32 and 50, respectively.

As to claim 66, this claim is directed to a method of delivering a composition to green lumber. The claimed method includes a heating step, i.e., heating a target zone of green lumber under conditions that **control the loss of moisture from the lumber**.

Hager teaches heating wood to facilitate penetration of a preservative into the wood. See column 6, lines 7-9. According to Hager, this heating step can be performed in a conventional manner, e.g., using steam or water. It is silent as to whether this step should be performed under **particular conditions** so as to control moisture loss from the wood. In other words, this reference does not teach the particular heating step required

by the method of claim 66, i.e., heating green lumber under conditions that **control the loss of moisture from the lumber**. Thus, Hager does not defeat the novelty of claim 66, nor that of claims 67-85, all of which depend from claim 66.

In view of the above remarks, Applicants point out that all of the new claims 32-85 are novel over both Elder and Hager.

### **Rejection under 35 U.S.C. § 103**

The Examiner raises an obviousness issue relying on Hager, either alone or in combination with Seidner, US 5,447,686 ("Seidner"), Vinden et al., US 6,596,975 ("Vinden"), and Sturm, US 5,468,284 ("Sturm"). See the Office Action, pages 4-6, items 6-9.

As pointed out above, the methods covered by claims 32-65 differ from that disclosed in Hager in at least one aspect. Namely, the former requires heating a substantially dry lignocellulostic substrate with RF/microwave energy, while the latter teaches heating hardwood using water/steam. It is common knowledge that heating substantially dry lignocellulostic substrate with RF/microwave energy raises the risk of cracking and burning in the substrate. In view of this common knowledge, a skilled person in the art would have been discouraged from replacing the water/steam heating approach taught in Hager with the RF/microwave energy heating approach required by claims 32-65. Thus, Hager alone does not render obvious these claims.

As pointed out by the Examiner, Seidner teaches maintaining lumber/wood at an elevated temperature for a certain period of time to sterilize the wood from pests; Vinden teaches using **microwave** energy to heat wood; and Sturm teaches treating wood with a waterproofing composition. See the Office Action, page 5, fourth paragraph; and page 6, first and third paragraphs.

Among the just-discussed three references, Vinden is the only one that touches on using microwave energy to heat wood. This reference teaches "subjecting wood with a **moisture content** (based on dry weight) of **at least 15%** to microwave radiation ..." See the abstract. Clearly, this reference teaches applying microwave energy to heat **wet** wood, NOT substantially dry wood as required by claims 32-65. Thus, this reference

does not cure the deficiency of Hager pointed out above, i.e., failing to teach using RF/microwave energy to heat substantially dry wood. As neither Seidner nor Sturm mentions use of RF/microwave energy for heating wood, they also do not make up for the deficiency of Hager. In this regard, Applicants reiterate that the common knowledge pointed out discourages a skilled artisan from using RF/microwave energy to heat substantially dry wood, as required by claims 32-65.

Taken together, Hager, either alone or in combination with Vinden, Seidner, and Sturm, does not render claims 32-65 obvious.

Turning to claims 66-85, Applicants have pointed out above that these claims all require a particular heating step, i.e., heating green lumber under conditions that **control the loss of moisture from the lumber**. As also pointed out above, Hager teaches, in a general manner, heating wood to facilitate penetration of preservatives. Nowhere in this reference does it suggest heating wood under the special conditions required by claims 66-85. Given the above-summarized teachings in Seidner, Vinden, and Sturm relied on by the Examiner, none of these three references cure this deficiency of Hager. Thus, these four references, either taken alone or in combination, do not render claims 66-85 obvious.

### CONCLUSION

For the reasons set forth above, new claims 32-85 advanced in this document are novel and non-obvious over all of the prior art references cited in the Office Action. Favorable consideration of this application is therefore respectfully solicited.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

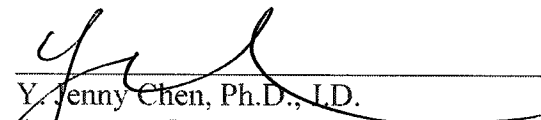
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The excess claims fee in the amount of \$ 598 and the Petition for Extension of Time fee in the amount of \$ 555 is being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account No. 50-4189, referencing Attorney Docket No. 65501-002US1.

Respectfully submitted,

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